

WHAT IS CLAIMED IS:

1. A method for determining buffer status, said method comprising:  
keying a buffer status to a transport gap other than a standard SONET transport gap.

2. The method of Claim 1, wherein said keying a buffer status to a transport gap other than a standard SONET transport gap further comprises:  
keying a transmit buffer status to a transport gap other than the standard SONET transport gap.

3. The method of Claim 2, wherein said keying a transmit buffer status to a transport gap other than the standard SONET transport gap further comprises:  
the transmit buffer interposed between a pointer interpreter which receives data from a switching matrix and a pointer generator which prepares a standard SONET STS-N frame.

4. The method of Claim 2, wherein said keying a transmit buffer status to a transport gap other than the standard SONET transport gap further comprises:  
keying the transmit buffer to at least a column length of a non-standard SONET transport gap.

5. The method of Claim 4, wherein each column of the non-standard SONET transport gap contains 1 byte per each STS channel in use.

6. The method of Claim 4, wherein said keying the transmit buffer to at least a column length of a non-standard SONET transport gap further comprises:  
keying a pointer generator constructed to read data from the transmit buffer to at least a column length of a non-standard SONET transport gap.

7. The method of Claim 6, wherein said keying a pointer generator constructed to read data from the transmit buffer to at

3 least a column length of a non-standard SONET transport gap further  
4 comprises:

5 accepting input specifying a substantially 28-column almost-  
6 empty range for the pointer generator reading data  
7 constructed to read data from the transmit buffer.

1 8. The method of Claim 4, wherein said keying the transmit  
2 buffer to at least a column length of a non-standard SONET transport  
3 gap further comprises:

4 keying a pointer interpreter constructed to write data to the  
5 transmit buffer to at least a column length of a non-  
6 standard SONET transport gap.

1 9. The method of Claim 8, wherein said keying a pointer  
2 generator constructed to write data to the transmit buffer to at  
3 least a column length of a non-standard SONET transport gap further  
4 comprises:

5 accepting input specifying a substantially 5-column almost-full  
6 range for the pointer interpreter constructed to write  
7 data to the transmit buffer.

1 10. The method of Claim 1, wherein said keying a buffer  
2 status to a transport gap other than a standard SONET transport gap  
3 further comprises:

4 keying a receive buffer status to a transport gap other than  
5 the standard SONET transport gap.

1 11. The method of Claim 10, wherein said keying a receive  
2 buffer status to a transport gap other than the standard SONET  
3 transport gap further comprises:

4 the receive buffer interposed between a pointer generator which  
5 feeds data to a switching matrix and a pointer  
6 interpreter which receives data.

12. The method of Claim 10, wherein said keying a receive  
buffer status to a transport gap other than the standard SONET  
transport gap further comprises:  
keying the receive buffer to at least a column length of a non-  
standard SONET transport gap.

13. The method of Claim 12, wherein each column of the non-  
standard SONET transport gap contains 1 byte per each STS channel in  
use.

14. The method of Claim 12, wherein said keying the receive  
buffer to at least a column length of a non-standard SONET transport  
gap further comprises:  
keying a pointer generator constructed to read data from the  
receive buffer to at least a column length of a non-  
standard SONET transport gap.

15. The method of Claim 14, wherein said keying a pointer  
generator constructed to read data from the receive buffer to at  
least a column length of a non-standard SONET transport gap further  
comprises:  
accepting input specifying a substantially 5-column almost-  
empty range for the pointer generator constructed to read  
data from the transmit buffer.

16. The method of Claim 12, wherein said keying the receive  
buffer to at least a column length of a non-standard SONET transport  
gap further comprises:  
keying a pointer interpreter constructed to write data to the  
receive buffer to at least a column length of a non-  
standard SONET transport gap.

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17. The method of Claim 16, wherein said keying the receive  
buffer to at least a column length of a non-standard SONET transport  
gap further comprises:  
accepting input specifying a substantially 28-column almost-  
full range for the pointer interpreter constructed to  
write data to the receive buffer.

18. A system for determining buffer status, said system  
comprising:  
means for keying a buffer status to a transport gap other than  
a standard SONET transport gap.

19. The system of Claim 18, wherein said means for keying a  
buffer status to a transport gap other than a standard SONET  
transport gap further comprises:  
means for keying a transmit buffer status to a transport gap  
other than the standard SONET transport gap.

20. The system of Claim 19, wherein said means for keying a  
transmit buffer status to a transport gap other than the standard  
SONET transport gap further comprises:  
the transmit buffer interposed between a pointer interpreter  
which receives data from a switching matrix and a pointer  
generator which prepares a standard SONET STS-N frame.

21. The system of Claim 19, wherein said means for keying a  
transmit buffer status to a transport gap other than the standard  
SONET transport gap further comprises:  
means for keying the transmit buffer to at least a column  
length of a non-standard SONET transport gap.

22. The system of Claim 21, wherein each column of the non-  
standard SONET transport gap contains 1 byte per each STS channel in  
use.

23. The system of Claim 21, wherein said means for keying the  
transmit buffer to at least a column length of a non-standard SONET  
transport gap further comprises:  
means for keying a pointer generator constructed to read data  
from the transmit buffer to at least a column length of a  
non-standard SONET transport gap.

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1 24. The system of Claim 21, wherein said means for keying the  
2 transmit buffer to at least a column length of a non-standard SONET  
3 transport gap further comprises:

4 means for keying a pointer interpreter constructed to write  
5 data to the transmit buffer to at least a column length  
6 of a non-standard SONET transport gap.

1 25. The system of Claim 18, wherein said means for keying a  
2 buffer status to a transport gap other than a standard SONET  
3 transport gap further comprises:

4 means for keying a receive buffer status to a transport gap  
5 other than the standard SONET transport gap.

1 26. The system of Claim 25, wherein said means for keying a  
2 receive buffer status to a transport gap other than the standard  
3 SONET transport gap further comprises:

4 the receive buffer interposed between a pointer generator which  
5 feeds data to a switching matrix and a pointer  
6 interpreter which receives data.

1 27. The system of Claim 25, wherein said means for keying a  
2 receive buffer status to a transport gap other than the standard  
3 SONET transport gap further comprises:

4 means for keying the receive buffer to at least a column length  
5 of a non-standard SONET transport gap.

1 28. The system of Claim 27, wherein each column of the non-  
2 standard SONET transport gap contains 1 byte per each STS channel in  
3 use.

1 29. The system of Claim 27, wherein said means for keying the  
2 receive buffer to at least a column length of a non-standard SONET  
3 transport gap further comprises:

4 means for keying a pointer generator constructed to read data  
5 from the receive buffer to at least a column length of a  
6 non-standard SONET transport gap.

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30. The system of Claim 27, wherein said means for keying the receive buffer to at least a column length of a non-standard SONET transport gap further comprises:  
means for keying a pointer interpreter constructed to write data to the receive buffer to at least a column length of a non-standard SONET transport gap.

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1 31. A SONET node comprising:  
2 at least one pointer interpreter having an almost full buffer  
3 detector set substantially equal to a number of columns  
4 present in a non-standard SONET transport gap.

1 32. The SONET node of Claim 31, wherein the number of columns  
2 present in a non-standard SONET transport gap comprises 27 columns of  
3 data.

1 33. The SONET node of Claim 32, wherein each of the columns  
2 comprises at least one byte of data for each STS channel in use.

1 34. The SONET node of Claim 31, wherein the SONET node  
2 further comprises one or more components selected from the group  
3 comprising a processor, a memory device, a bus, and a communications  
4 device.



1 *35* 35. A SONET node comprising:  
2 *Be* at least one pointer generator having an almost empty buffer  
3 detector set substantially equal to a number of columns  
4 present in a non-standard SONET transport gap.

1 36. The SONET node of Claim 35, wherein the number of columns  
2 present in a non-standard SONET transport gap comprises 27 columns of  
3 data.

1 37. The SONET node of Claim 36, wherein each of the columns  
2 comprises at least one byte of data for each STS channel in use.

1 38. The SONET node of Claim 35, wherein the SONET node  
2 further comprises one or more components selected from the group  
3 comprising a processor, a memory device, a bus, and a communications  
4 device.

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1 39. A method for maintaining communications when using  
2 asymmetrical gapping structures, said method comprising:  
3 detecting a transition involving at least one SONET frame;  
4 in response to said detecting yielding a determination that a  
5 receive FIFO buffer is almost full during the transition  
6 involving at least one SONET frame, engaging in negative  
7 stuffing; and  
8 in response to said detecting yielding a determination that a  
9 receive FIFO buffer is almost empty during the transition  
10 involving at least one SONET frame, engaging in positive  
11 stuffing.

1 40. The method of Claim 39, wherein the determination that a  
2 receive buffer is almost full comprises detecting that the receive  
3 buffer has less empty space than that required to buffer data during  
4 construction of a non-standard transport gap.

1 41. The method of Claim 40, wherein said detecting that the  
2 receive buffer has less empty space than that required to buffer data  
3 during construction of a non-standard transport gap further comprises  
4 detecting that the receive buffer has space less than or equal to  
5 twenty-eight columns of data when the non-standard transport gap is  
6 twenty-seven columns of data in size.

1 42. The method of Claim 39, wherein the determination that a  
2 receive buffer is almost empty comprises detecting that the receive  
3 buffer has less empty space than that required to buffer data during  
4 interpretation of a standard transport gap.

1 43. The method of Claim 42, wherein said detecting that the  
2 receive buffer has less empty space than that required to buffer data  
3 during interpretation of a standard transport gap further comprises  
4 detecting that the receive buffer has space less than or equal to  
5 five columns of data when the standard transport gap is three columns  
6 of data in size.

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2 *Be* 44. A system for maintaining communications when using  
3 asymmetrical gapping structures, said method comprising:  
4 means for detecting a transition involving at least one SONET  
5 frame;  
6 means, responsive to said means for detecting yielding a  
7 determination that a receive FIFO buffer is almost full  
8 during the transition involving at least one SONET frame,  
9 for engaging in negative stuffing; and  
10 means, responsive to said means for detecting yielding a  
11 determination that a receive FIFO buffer is almost empty  
12 during the transition involving at least one SONET frame,  
for engaging in positive stuffing.

1 45. The system of Claim 44, wherein said means, responsive to  
2 said means for detecting yielding a determination that a receive FIFO  
3 buffer is almost full during the transition involving at least one  
4 SONET frame, for engaging in negative stuffing further comprises:  
5 means for detecting that the receive buffer has less empty  
6 space than that required to buffer data during  
7 construction of a non-standard transport gap.

1 46. The system of Claim 45, wherein said means for detecting  
2 that the receive buffer has less empty space than that required to  
3 buffer data during construction of a non-standard transport gap  
4 further comprises:  
5 means for detecting that the receive buffer has space less than  
6 or equal to twenty-eight columns of data when the non-  
7 standard transport gap is twenty-seven columns of data in  
8 size.

1 47. The system of Claim 44, wherein said means, responsive to  
2 said means for detecting yielding a determination that a receive FIFO  
3 buffer is almost empty during the transition involving at least one  
4 SONET frame, for engaging in positive stuffing further comprises:  
5 means for detecting that the receive buffer has less empty  
6 space than that required to buffer data during  
7 interpretation of a standard transport gap.

1 *Sub 1* 48. The system of Claim 47, wherein said means for detecting  
2 that the receive buffer has less empty space than that required to  
3 buffer data during interpretation of a standard transport gap further  
4 comprises:  
5 means for detecting that the receive buffer has space less than  
6 or equal to five columns of data when the standard  
7 transport gap is three columns of data in size.

1 49. A method for maintaining communications when using  
2 asymmetrical gapping structures, said method comprising:  
3 detecting a transition involving at least one SONET frame;  
4 in response to said detecting yielding a determination that a  
5 transmit FIFO buffer is almost full during the transition  
6 involving at least one SONET frame, engaging in negative  
7 stuffing; and  
8 in response to said detecting yielding a determination that a  
9 transmit FIFO buffer is almost empty during the  
10 transition involving at least one SONET frame, engaging  
11 in positive stuffing.

1 50. The method of Claim 49, wherein the determination that  
2 the transmit buffer is almost full comprises detecting that the  
3 transmit buffer has less empty space than that required to buffer  
4 data during construction of a standard transport gap.

1 51. The method of Claim 50, wherein said detecting that the  
2 transmit buffer has less empty space than that required to buffer  
3 data during construction of a standard transport gap further  
4 comprises detecting that the transmit buffer has space less than or  
5 equal to five columns of data when the standard transport gap is  
6 three columns of data in size.

1 52. The method of Claim 49, wherein the determination that  
2 the transmit buffer is almost empty comprises detecting that the  
3 transmit buffer has less empty space than that required to buffer  
4 data during interpretation of a non-standard transport gap.

1 53. The method of Claim 52, wherein said detecting that the  
2 transmit buffer has less empty space than that required to buffer  
3 data during interpretation of a non-standard transport gap further  
4 comprises detecting that the transmit buffer has space less than or  
5 equal to twenty-eight columns of data when the non-standard transport  
6 gap is twenty-seven columns of data in size.

1 *file* 54. A system for maintaining communications when using  
2 asymmetrical gapping structures, said system comprising:  
3 means for detecting a transition involving at least one SONET  
4 frame;  
5 means, responsive to said means for detecting yielding a  
6 determination that a transmit FIFO buffer is almost full  
7 during the transition involving at least one SONET frame,  
8 for engaging in negative stuffing; and  
9 means, responsive to said means for detecting yielding a  
10 determination that a transmit FIFO buffer is almost empty  
11 during the transition involving at least one SONET frame,  
12 for engaging in positive stuffing.

1 55. The system of Claim 54, wherein said means, responsive to  
2 said means for detecting yielding a determination that a transmit  
3 FIFO buffer is almost full during the transition involving at least  
4 one SONET frame, for engaging in negative stuffing further comprises:  
5 means for detecting that the transmit buffer has less empty  
6 space than that required to buffer data during  
7 construction of a standard transport gap.

1 56. The system of Claim 55, wherein said means for detecting  
2 that the transmit buffer has less empty space than that required to  
3 buffer data during construction of a standard transport gap further  
4 comprises:  
5 means for detecting that the transmit buffer has space less  
6 than or equal to five columns of data when the standard  
7 transport gap is three columns of data in size.

1 57. The system of Claim 54, wherein said means, responsive to  
2 said means for detecting yielding a determination that a transmit  
3 FIFO buffer is almost empty during the transition involving at least  
4 one SONET frame, for engaging in positive stuffing further comprises:  
5 means for detecting that the transmit buffer has less empty  
6 space than that required to buffer data during  
7 interpretation of a non-standard transport gap.

1 *Sub B6* 58. The system of Claim 57, wherein said means for detecting  
2 that the transmit buffer has less empty space than that required to  
3 buffer data during interpretation of a non-standard transport gap  
4 further comprises:  
5 means for detecting that the transmit buffer has space less  
6 than or equal to twenty-eight columns of data when the  
7 non-standard transport gap is twenty-seven columns of  
8 data in size.